

PATENT CLAIMS

1. Method for producing an oxygen-containing compound used as fuel additive,  
in particular in Diesel fuels, gasoline, and rapeseed methyl ester, characterised by
  - a) Reaction of a multivalent alcohol with an aldehyde or ketone to produce an acetal, and
  - b) Etherification of the still free hydroxyl groups of the acetal produced in step a) with tertiary olefins.
2. Method according to Claim 1, characterised in that the multivalent alcohol in step a) is selected from the group which comprises trivalent to hexavalent alcohols, in particular triols such as glycerine, tetrols, pentols, trimethylolpropane, penta erythrite and sugar alcohols with 4 to 6 hydroxyl groups.
3. Method according to Claim 1 or 2, characterised in that the aldehyde, the dialdehyde, or the ketone in step a) contains three to seven carbon atoms, whereby for preference acetaldehyde, acetone, or butyral aldehyde can be used.

4. Method according to one of Claims 1 to 3, characterised in that the tertiary olefin in step b) is selected from the group which comprises i-butene, 2-methyl-1-butene, 2-methyl-2-butene, isomer hexene with a tertiary carbon atom at the double bond, isomer heptene with a tertiary carbon atom at the double bond, and hydrocarbon mixtures which contain i-butene, such as in raffinate 1 of the crude oil distillation, and for particular preference C<sub>4</sub> and/or C<sub>5</sub> tert. alkenes.
5. Method according to one of Claims 1 to 4, characterised in that the raw materials for producing the oxygen-containing compound are selected in such a way that the oxygen-containing compound produced dissolves completely in the fuel in particular in Diesel fuel, gasoline, and/or rapeseed methyl ester.
6. Method according to one of Claims 1 to 5, characterised in that the raw materials for producing the oxygen-containing compound are selected in such a way that the addition of the oxygen-containing compound produced to the fuel, in particular to Diesel fuel, gasoline, and/or rapeseed methyl ester, does not

exert a negative influence on the flash point of the fuel, in particular of the Diesel fuel, gasoline, and/or rapeseed methyl ester.

7. Method according to one of Claims 1 to 6, characterised in that the raw materials for producing the oxygen-containing compound are selected in such a way

that the addition of the oxygen-containing compound produced to the fuel, in particular to Diesel fuel, gasoline, and/or rapeseed methyl ester, does not increase the water solubility of the fuel, in particular of Diesel fuel, gasoline, and/or rapeseed methyl ester.

8. Use of the oxygen-containing compound produced according to a method according to Claims 1 to 7 as an additive for fuels, in particular for Diesel fuels, gasolines, and rapeseed methyl esters, in quantities from 0.1 % by volume to maximum 30 % by volume.

See attached drawing  
for details